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# The Epidaurus Project and DoD Health Facilities Design

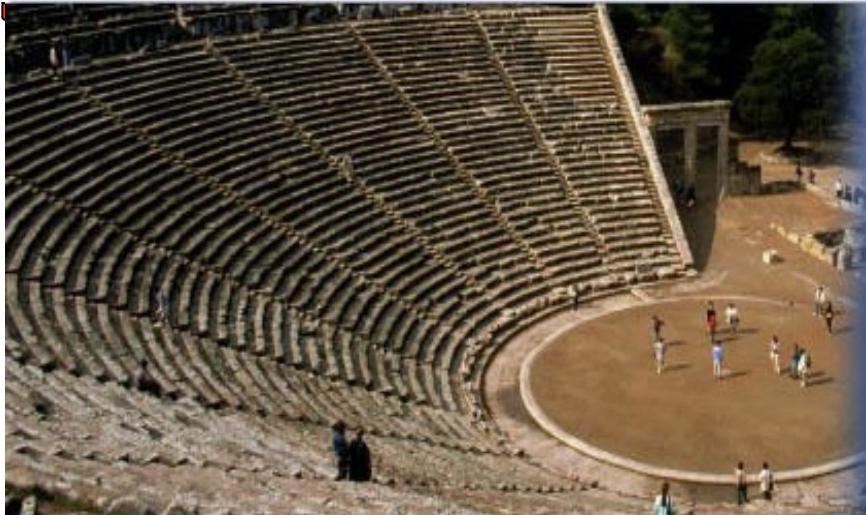
Fred Foote, M.D.  
Project Officer

**[www.usuhs.mil/pmb/hsa/Epidaur  
us](http://www.usuhs.mil/pmb/hsa/Epidaurus)**

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June 21 , 2010

# Definitions



*The Sanctuary of Asklepios at Epidaurus was the most celebrated healing centre of the ancient world. The ancient Greeks approached health from a holistic point of view, and the Sanctuary included a theater, gymnasium, and stadium as well as traditional medical treatments. In Epidaurus, the vast site of temples and hospital buildings is a tribute to the healing cults of Greek and Roman times.*

## Epidaurus Project Symposium on Healing Design

**Evidence-Based Design (EBD)** - the conscientious, explicit and judicious use of current best evidence in making planning and design decisions that advance the needs of patients, staff, families and organizations.

**Epidaurus Project - conceived 2001** - What hospital architectural/design features embody patient-centered design (PCD)?"

# Why Patient Centered Care and Evidence Based Design?

## Hospitals Are Dangerous

**44,000-95,000 die each year due to preventable medical errors**  
IOM, 1999

**2,000,000 Hospital-acquired infections a year in U.S.; 88,000 die**  
IOM, 2000

**Infections are more serious:**  
22% of staph infection were MRSA in 1992  
**60% in 2005;**  
70%-90% of patients carrying MRSA are never identified  
NY Times 2005

**20% Nursing turnover**  
**Nurses average 47+ years old**  
RWJF, 2005

## The Role of the Physical Environment



1. More evidence than expected: 700+ rigorous studies
2. Many designs make hospitals more stressful & riskier for patients, families & staff.
3. A LOT of good evidence is available

Full report:  
[www.healthdesign.org/research/reports](http://www.healthdesign.org/research/reports)

*From Presentation, Craig Zimring, PhD, Professor of Architecture, Georgia Institute of Technology  
Presentation to the MHS Tri Service Health Facility Conference, July 2006*

# Epidaurus Project I- Bioethics and Administration (2001-3)

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- Ed Pellegrino, M.D. (Head, President's Council on Bioethics)
- Roger Bulger, M.D. (IOM; NIH)
- Eric Cassell, M.D. (Cornell Univ.)
- James Zimble, M.D. (USUHS)
- Ken Shine (IOM, RAND)
- David Leach (ACGME)
- Jay Gershen (Univ. Colorado)
- John Porretto (Univ. Of Texas)
- Fred Foote, M.D. (NNMC); Barbara Mittelman, M.D. (NIH)



# Epidaurus Project Architects/Designers USUHS Conferences, 2003 and 2006

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- S. Frampton (Planetree)
- K. Hamilton (TX A&M)
- Wayne Ruga (England)
- Y. August (PA)
- S. Verderber (Clemson)
- Roger Ulrich (TX A&M)
- R. Guenther (Green)
- B. Huelat (Healing)
- A. Ridenour (Arts)
- D. Kamp (Gardens)
- R. Orr (Planetree)
- Craig Zimring (EBD)
- B. Komiske

# Epidaurus Project

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- NO GOVERNMENT CONTRACTS.
- PATRIOTIC DONATION OF SERVICES
- USUHS Conferences 2003, 2006, and 2009
- Consensus statements 2002 and 2005
- Promote inclusion of Patient/Family-Centered and Evidence-Based Design in DoD facilities
- Website  
***[http://www.usuhs.mil/pmb/hsa/epidaurus\\_project/index.aspx](http://www.usuhs.mil/pmb/hsa/epidaurus_project/index.aspx)***

# PATIENT/FAMILY CENTERED CARE & DESIGN

## Patient/Family Centered Care and Design

- I. Ensure the integrity of the clinical encounter
  - Core values; healing focus; **evidence-based design**
- II. Empower the patient
  - Human scale; residentialism; family involvement
- III. Focus on the relief of suffering
  - Incorporate nature; Spirituality; use of the Arts
- IV. Create a lifelong healing relationship
  - Multidisciplinary spaces; “Green” design; advanced informatics; **outcomes analysis and EBM**

# The Evidence - > 700 studies have demonstrated value -

Citations - Ulrich and Zimring, Role of the Physical Environment in the 21st Century Hospital (2004); available at [www.healthdesign.org](http://www.healthdesign.org)



- Planetree ward: **Decreased** staff walking patterns (29% nurse work minutes)
- **Decreased** noise: **Decreased** readmission rate CCU; ▼BP; ▲pt satisfaction
- Clean air (HEPA): **Decreased** infection and death rates patients
- Bright light: **Decreased** pain meds; decreased

- Single Patient Rooms - Single patient rooms: **Decreased** infection rates, falls, noise, self-reported stress
- **Increased** confidentiality (HIPAA), family presence, satisfaction with care



- Gardens: **Increased** overall satisfaction rate with hospital
- Patients report **decreased** stress and less depression

- Art - **Decreased** pain med requirements in ICU
- **Decreased** length of stay surgical patients



# 2005: The BRAC Opportunity

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- Walter Reed National Military Medical Center (WRNMMC) and new Ft. Belvoir Community Hospital
- Vision of a world class primary and tertiary centers embodying latest in healing design
- A beacon for our nation
- Opportunity to embody Epidaurus concepts
- CAPT Foote recalled to Washington
- Partnership with other DoD Projects on Evidence-Based Design (TMA (Boenecke, Malone), Army HFPA

# Linking the Built Environment to MHS Strategy

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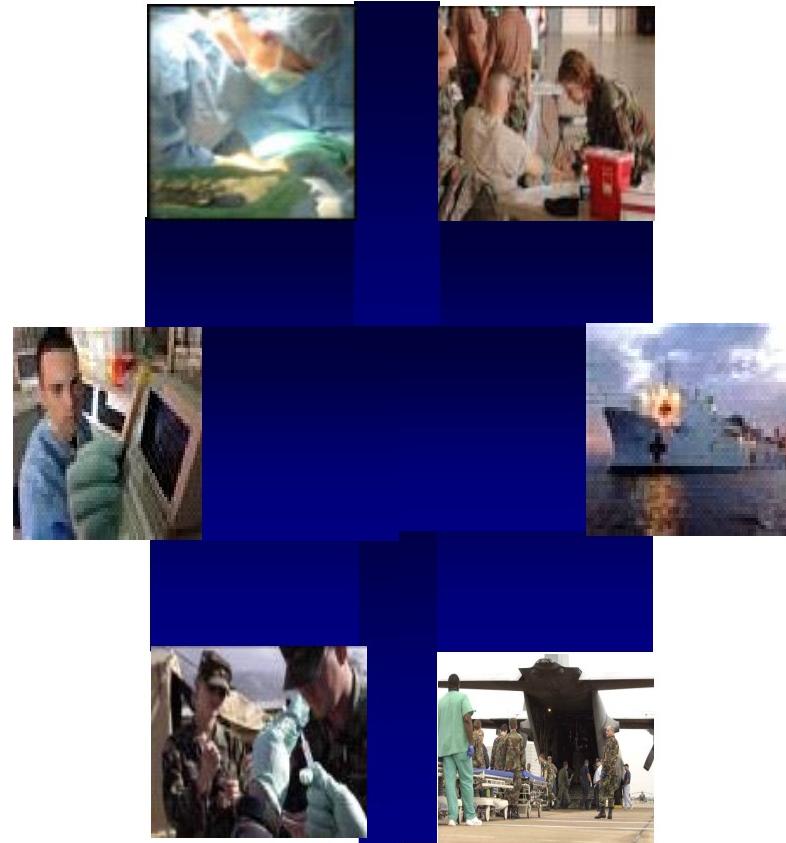
CAPT Steve Bell, USN, Director,  
Facilities, BUMED

Clay Boenecke, Chief, Capital  
Planning Branch, PPMD/TMA

COL Rick Bond, Commander, US  
Army Health Facility Planning  
Agency

CAPT Fred Foote, MC, USN, Project  
Officer, The Epidaurus Project

COL Ronn Steele, Chief, US Air  
Force Health Facilities Division



# EPI/EBDI Working Group: Principles

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- Create a patient and family-centered environment that respects privacy and dignity and relieves suffering
- Improve the quality and safety of healthcare delivery
- Create a positive work environment through ergonomics, efficiencies, lighting, and adjacencies
- Design for maximum standardization and future flexibility and growth
- Support care of the whole person, enhanced by contact with nature and positive distractions.

# Leadership Direction



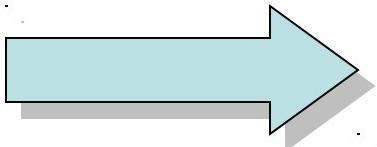
THE ASSISTANT SECRETARY OF DEFENSE

1200 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1200

JAN 22 2007

MEMORANDUM FOR COMMANDER, NAVAL FACILITIES ENGINEERING  
COMMAND  
COMMANDER, UNITED STATES ARMY CORPS OF  
ENGINEERS

SUBJECT: QDR Roadmap and Evidence-Based Design



As BRAC implementation drives the acquisition of new medical facilities in San Antonio and the National Capital Area, I request that you instruct the respective design teams to apply patient centered and evidence based design principles across all medical MICLON construction projects. A growing body of research has demonstrated that the built environment can positively influence health outcomes, patient safety, and long-term operating efficiencies to include reduction in staff injuries, reduction in nosocomial infection rates, patient falls, and reductions in length of hospital stay. Incorporating the results of this research along with changes in concepts of operations into the design of some of our most significant facilities will allow the Military Health System and the patients entrusted to our care to reap substantial health and system wide benefits for many years to come.

The Military Health System Office of Transformation was established by the Deputy Secretary of Defense to ensure that recommendations from the Quadrennial Defense Review are effectively implemented. QDR Roadmap 17 mandates leveraging and integrating evidence-based medicine with effective patient partnerships to ensure judicious use of resources while promoting healthy individuals and communities. In support of QDR Roadmap 17, the Office of Transformation has assumed leadership of a Tri-Service interdisciplinary team with substantial knowledge of patient centered and evidence based design. This team can be made available to provide any support or guidance that might be required.

My points of contact are COL Keith E. Essen, Deputy Director Army, and Military Health System Office of Transformation and Mr. Clay Boenecke, Chief, Capital Planning Branch, Portfolio Planning and Management Division, TMA. COL Essen can be reached at (202) 762-3098 or [keessen@us.med.navy.mil](mailto:keessen@us.med.navy.mil). Mr. Boenecke can be reached at (703) 681-4324 or [clayton.boenecke@tma.osd.mil](mailto:clayton.boenecke@tma.osd.mil).

A handwritten signature in black ink, appearing to read "William Winkenwerder".  
William Winkenwerder, Jr., MD

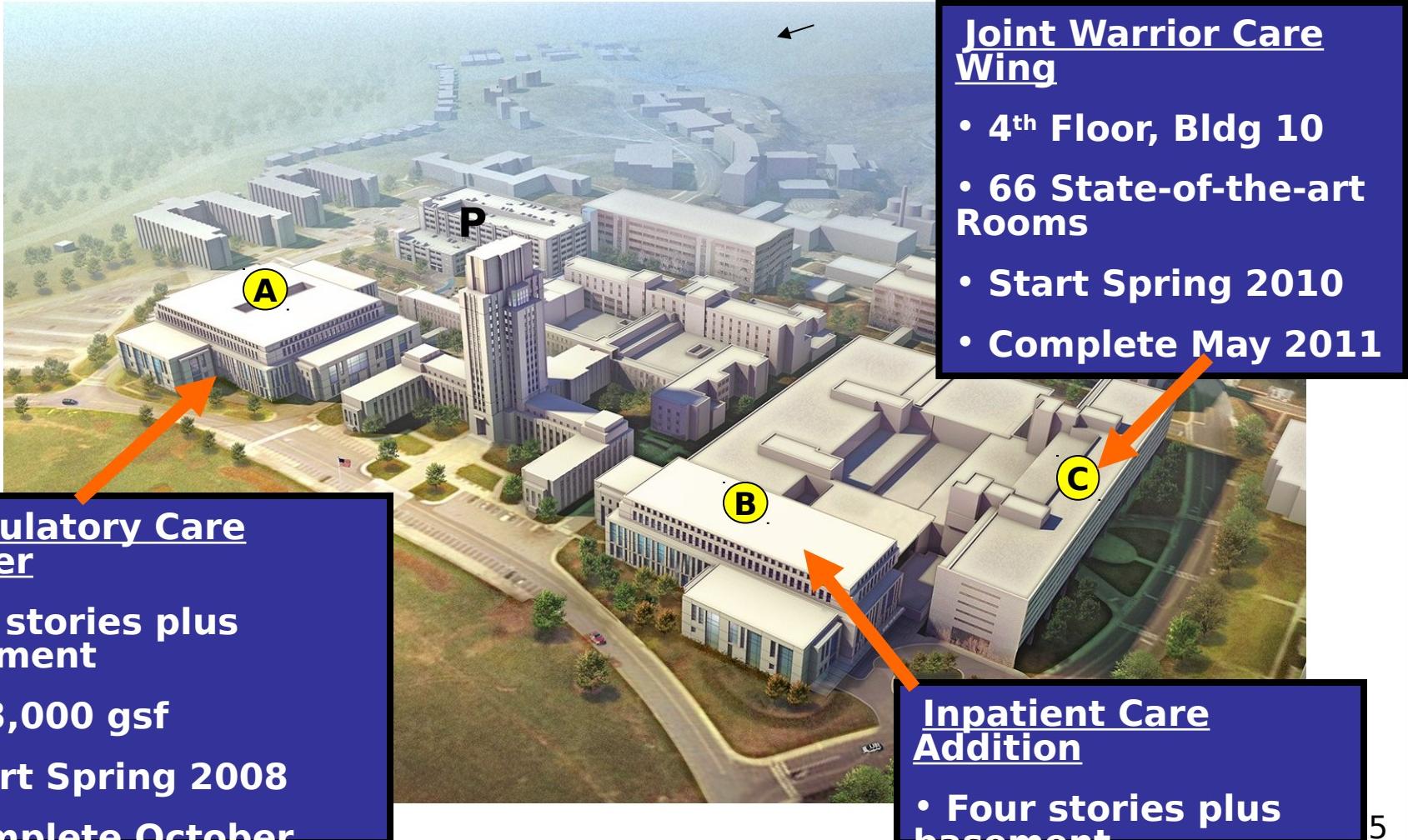
# 2007-8-- Successes

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- Broad acceptance of Epidaurus principles throughout the Military Health System
- Inclusion of Epidaurus features in BRAC designs
  - Single patient rooms
  - Facilities to support family involvement
  - Ultraclean air; light; noise control
  - Ergonomics for healthy workplace
  - Green design
  - Nature, art, and other positive distractions

# Aerial View - Medical Center

## WRNMMC Bethesda



# EPI/EBDI “Top 10 Priorities”) (NOT rank ordered)

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- Infection control
    - Advanced air purification
    - Handwashing
  - Single patient rooms
  - Family involvement in care
    - Sleepover beds, cooking
  - Residentialism
    - Decentralized, homelike
  - Maximal presence of light
  - Noise control
  - Treat the whole person
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- Promote interdisciplinary care
    - Co-location of clinics
    - Multidisc.spaces
  - Reduce stress for patients and staff
    - Positive distractions
    - wayfinding
  - Maximize views of /exposure to nature
    - Gardens, patios, etc
    - Central green zones for security

# Best Example of Epidaurus Ideas: Ft. Belvoir Community Hospital

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- Full commitment to basic Evidence Based Design
- Significant additional features: gardens, art, spirituality
- To open 2011 as part of WRNMMC system

# Fort Belvoir Community Hospital: Front View Facing East

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# Healing Gardens and Green Roofs



# --but more is needed--

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- Natural features: gardens, waterways, museums, arts/music, positive distractions, spiritual spaces
- Key features remain unfunded at WRNMMC
  - 100% single rooms (currently 65%)
  - Public areas and wards: Light, nature, residential features
  - Moving walkways to address widely separated buildings
- “Green Valley” central parkland feature
- Patient amenities: queen beds, lounge chairs, TVs, laptops, free downloads

# More Than Just The Building

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- Co-location of related clinics for Multidisciplinary Care
- Systematic analysis of patient outcomes
- Patient/Family-Centered Care initiative
- Wellness evaluations for all patients
- Real-time data driven quality analysis<sup>21</sup>

# 2008: Creation of Joint Task Force (JTF CAPMED)

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- Unites all military medical facilities in National Capital Region (NCR) under one command
- WRNMMC, Ft. Belvoir, Ft. Meade, and more than 40 outpatient clinics
- Incorporates advanced processes of care
- Potentially a model integrated delivery system (IDS) for the nation

# Discordance Between Ideal Facility and DoD Capabilities

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- Duty of Stewardship over tax dollars limits what BRAC /DoD funding can achieve
- Partnerships can help
  - Public-private partnerships
  - NIH, VA collaboration
  - Possibility of Congressional interest
  - Philanthropy

# Center for the Intrepid (Fallen Heroes Foundation)

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- Created by the Fisher Family (Arnold Fisher)
- \$50 million advanced rehab center donated to MHS at Brooke AMC, San Antonio
- \$70 million NICOE research/treatment center for neuropsychiatric conditions- at WRNMMC
- Two of the premier facilities in the world
- Demonstrates feasibility of philanthropic assistance in support of our troops

# National Intrepid Center of Excellence (NICoE)

## Smithgroup Concept

- 65,000+ sf facility
- Cost =~\$50M+
- Built and Equipped by  
FHF



NATIONAL INTREPID CENTER OF EXCELLENCE  
INTREPID FALLEN HEROES FUND

February 26, 2008  
SMITHGROUP

# 2010: Epidaurus Initiatives

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- Create inspirational interiors/ courtyard gardens at NNMC (Rothschild Foundation)
- Develop stream site on NNMC campus as North/South“green connector”
- Holistic Medicine Program at NICoE
- Healing art-making program for Warriors
- “Epidaurus 2”: metrics for holistic interventions

# Ultimate Vision: The National Medical Center of the United States

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- Combine military facilities, VA, NIH, USUHS in the National Capital Region
- Model facilities and Integrated Delivery System to be a laboratory for the nation
- Focus of research on healing and “green” building design, and advanced processes of care
- Could anchor a variety of proposed national health care systems

# Our Opportunity

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- Through varied partnerships, to include advanced natural, artistic, and healing features in the current BRAC hospital designs—
  - A watershed in federal health design
  - A beacon for our nation, exemplifying ideal health care
  - An anchor for the health system of the U.S.
  - **A visionary healing environment for our troops**

